

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

SPRING DEVELOPMENT

(No.)

CODE 574

DEFINITION

Collection of water from springs or seeps to provide water for a conservation need.

PURPOSE

Improve the quantity and/or quality of water for livestock, wildlife or other agricultural uses.

CONDITIONS WHERE PRACTICE APPLIES

In areas where a spring or seep will provide a dependable supply of suitable water for the planned use.

CRITERIA

General. An investigation of site conditions shall be made, including:

- Soil borings
- Water quality for the intended purpose
- Water quantity for the intended purpose
- Suitability of the spring location for the intended purpose
- A determination that the farmer has the appropriate water rights or permits to develop the spring
- An assessment to determine existing ecological functions and potential losses from the spring development
- A certified wetland determination
- An assessment of any cultural resources associated with the spring

Develop springs by removing obstructions to the flow, collecting the water flow, and storing the water, if flow from the spring is not sufficient to meet the peak demand of the intended use.

Remove obstructions to spring flow such as fine-grained sediments, rock, slope-wash materials, and vegetation to allow the spring to flow freely. Design the development of the spring to prevent obstructions from reoccurring.

The type of collection system used for the spring development is dependent upon the type of spring and site geology. If a collection trench is used, the trench shall extend into the impervious layer. The minimum length of the trench shall extend the length of the water bearing outcrop unless an engineering analysis proves this unnecessary. An impervious cutoff wall shall be constructed along the downstream side of the water bearing outcrop. Any pipe(s) installed in the collection system(s) shall have a minimum nominal diameter of 4 inches and be surrounded with geotextile and filter aggregate to restrict and trap impurities from entering the system. Sand, gravel, and crushed rock aggregates shall be well graded and composed of clean, hard, durable particles. Include a spring box, if necessary, to allow sediment to settle out of the spring flow or to provide storage to meet peak demands on the water from the spring. Locate the spring box to allow water to flow by gravity from the spring to the spring box. Construct the spring box of a durable material such as concrete, plastic, galvanized steel, or naturally rot resistant wood. The spring box shall be of sufficient size to provide for the storage of sediment and any required storage of water. The cross sectional area of the spring box shall be a minimum of 1.5 ft².

Provide the spring box with a tight fitting cover to prevent trash and surface runoff from entering. To prevent freezing, bury the spring box in the soil.

The spring development shall have an outlet pipe that carries the water to its intended use. The outlet pipe shall be a minimum of 1.25 inches nominal diameter. Design the outlet pipe according to Pipeline (516). If the outlet is from a spring box, the outlet pipe shall be a minimum of 6 inches off the floor to allow for sediment collection.

A pump will be needed if gravity will not carry water from the spring to where the water will be used. Base the type and size of the pump upon available power sources and the water delivery needs.

When flow from the spring, whether intermittent or continuous, will exceed the capacity of the collection system, an overflow is required. Size the overflow to carry the maximum flow expected from the spring during periods of wet weather. Manage the overflow so that it does not create a resource problem.

Design the spring development and affiliated structures so they shall be maintained and protected from damage by freezing, flooding, livestock, excess sediment, vehicular traffic and water quality contamination. This shall include the use of shutoff valves and air vent/vacuum valves.

Follow Watering Facility (614) to design facilities to provide access for livestock and wildlife to water from the developed spring.

Regrade areas disturbed by construction of the spring development to keep surface flow out of the spring. Revegetate disturbed areas as soon as possible after construction.

CONSIDERATIONS

Native vegetation adapted to wet conditions should be considered on wet sites as an alternative to introduced grasses to stabilize areas after construction.

Consider how other conservation practices properly applied on the spring recharge area may increase infiltration of precipitation in order to conserve the spring's flow.

Consider how diversion of water from spring developments affects stream flows in the watershed.

Aquatic habitat quality may be conserved when a spring is developed near surface waters or on a floodplain, by incorporating a float valve that shuts off flow to the tank and returns overflow via a stable outlet to the same watershed where it was collected.

Springs may represent islands of unique habitat in the landscape, supporting plant and animal populations that only occur in an area of a high water table. Consider options for developing the spring or seep that preserve the conditions that support these unique habitats.

Springs are sources of water for fish and wildlife. Maintain fish and wildlife access to water from the spring development where possible.

Brush removal, excavation, clean out, and withdrawal of water are manipulations that may affect wildlife habitat and wetland functions and values. However, selective removal of undesirable brush and management for desirable native plants may reduce evaporative losses and conserve biodiversity.

PLANS AND SPECIFICATIONS

Plans and specifications shall provide details of planned location, materials and construction requirements for the installation of the practice to meet its intended purpose.

OPERATION AND MAINTENANCE

The Operation and Maintenance (O&M) plan shall contain a schedule for the periodic monitoring of the following items:

- Sediment buildup in the spring box
- Clogging of outlet and overflow pipes
- Diversion of surface water from the collection area and spring box
- Erosion from overflow pipes
- Rodent damage

Any problems discovered shall be immediately repaired.

REFERENCES

USDA-NRCS, National Engineering Handbook (NEH), Part 650, Engineering Field Handbook (EFH), Chapter 12, Springs and Wells

USDA-NRCS, National Engineering Handbook (NEH), Part 631, Geology

The Restoration & Management of Small Wetlands of the Mountains & Piedmont in the Southeast, USDA-NRCS, Watershed Science Institute, Somers, A. B. et al. November 2000

Groundwater & Wells, Fletcher Driscoll, Johnson Division

Basic Ground-Water Hydrology, Water Supply Paper 2220, US Geological Survey